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Student Solutions Manual for Markov Processes for Stochastic Modeling

Academic Press Student Solutions Manual for Markov Processes for Stochastic Modeling

Probability and Stochastic Processes

A Friendly Introduction for Electrical and Computer Engineers

John Wiley & Sons This text introduces engineering students to probability theory and stochastic processes. Along with thorough mathematical development of the subject, the book presents intuitive explanations of key points in order to give students the insights they need to apply math to practical engineering problems. The first seven chapters contain the core material that is essential to any introductory course. In one-semester undergraduate courses, instructors can select material from the remaining chapters to meet their individual goals. Graduate courses can cover all chapters in one semester.

Stochastic Processes

Solutions Manual

Brownian Motion

An Introduction to Stochastic Processes

Walter de Gruyter GmbH & Co KG Brownian motion is one of the most important stochastic processes in continuous time and with continuous state space. Within the realm of stochastic processes, Brownian motion is at the intersection of Gaussian processes, martingales, Markov processes, diffusions and random fractals, and it has influenced the study of these topics. Its central position within mathematics is matched by numerous applications in science, engineering

and mathematical finance. Often textbooks on probability theory cover, if at all, Brownian motion only briefly. On the other hand, there is a considerable gap to more specialized texts on Brownian motion which is not so easy to overcome for the novice. The authors’ aim was to write a book which can be used as an introduction to Brownian motion and stochastic calculus, and as a first course in continuous-time and continuous-state Markov processes. They also wanted to have a text which would be both a readily accessible mathematical back-up for contemporary applications (such as mathematical finance) and a foundation to get easy access to advanced monographs. This textbook, tailored to the needs of graduate and advanced undergraduate students, covers Brownian motion, starting from its elementary properties, certain distributional aspects, path properties, and leading to stochastic calculus based on Brownian motion. It also includes numerical recipes for the simulation of Brownian motion.

Stochastic Processes and Applications

Diffusion Processes, the Fokker-Planck and Langevin Equations

Springer This book presents various results and techniques from the theory of stochastic processes that are useful in the study of stochastic problems in the natural sciences. The main focus is analytical methods, although numerical methods and statistical inference methodologies for studying diffusion processes are also presented. The goal is the development of techniques that are applicable to a wide variety of stochastic models that appear in physics, chemistry and other natural sciences. Applications such as stochastic resonance, Brownian motion in periodic potentials and Brownian motors are studied and the connection between diffusion processes and time-dependent statistical mechanics is elucidated. The book contains a large number of illustrations, examples, and exercises. It will be useful for graduate-level courses on stochastic processes for students in applied mathematics, physics and engineering. Many of the topics covered in this book (reversible diffusions, convergence to equilibrium for diffusion processes, inference methods for stochastic differential equations, derivation of the generalized Langevin equation, exit time problems) cannot be easily found in textbook form and will be useful to both researchers and students interested in the applications of stochastic processes.

Markov Processes for Stochastic Modeling

Newnes Markov processes are processes that have limited memory. In particular, their dependence on the past is only through the previous state. They are used to model the behavior of many systems including communications systems, transportation networks, image segmentation and analysis, biological systems and DNA sequence analysis, random atomic motion and diffusion in physics, social mobility, population studies, epidemiology, animal and insect migration, queueing systems, resource management, dams, financial engineering, actuarial science, and decision systems. Covering a wide range of areas of application of Markov processes, this second edition is revised to highlight the most important aspects as well as the most recent trends and applications of Markov processes. The author spent over 16 years in the industry before returning to academia, and he has applied many of the principles covered in this book in multiple research projects. Therefore, this is an applications-oriented book that also includes enough theory to provide a solid ground in the subject for the reader. Presents both the theory and applications of the different aspects of Markov processes Includes numerous solved examples as well as detailed diagrams that make it easier to understand the principle being presented Discusses different applications of hidden Markov models, such as DNA sequence analysis and speech analysis.

Stochastic Processes

Theory for Applications

Cambridge University Press This definitive textbook provides a solid introduction to discrete and continuous stochastic processes, tackling a complex field in a way that instils a deep understanding of the relevant mathematical principles, and develops an intuitive grasp of the way these principles can be applied to modelling real-world systems. It includes a careful review of elementary probability and detailed coverage of Poisson, Gaussian and Markov processes with richly varied queuing applications. The theory and applications of inference, hypothesis testing, estimation, random walks, large deviations, martingales and investments are developed. Written by one of the world's leading information theorists, evolving over twenty years of graduate classroom teaching and enriched by over 300 exercises, this is an

exceptional resource for anyone looking to develop their understanding of stochastic processes.

Essentials of Stochastic Processes

Springer Building upon the previous editions, this textbook is a first course in stochastic processes taken by undergraduate and graduate students (MS and PhD students from math, statistics, economics, computer science, engineering, and finance departments) who have had a course in probability theory. It covers Markov chains in discrete and continuous time, Poisson processes, renewal processes, martingales, and option pricing. One can only learn a subject by seeing it in action, so there are a large number of examples and more than 300 carefully chosen exercises to deepen the reader's understanding. Drawing from teaching experience and student feedback, there are many new examples and problems with solutions that use TI-83 to eliminate the tedious details of solving linear equations by hand, and the collection of exercises is much improved, with many more biological examples. Originally included in previous editions, material too advanced for this first course in stochastic processes has been eliminated while treatment of other topics useful for applications has been expanded. In addition, the ordering of topics has been improved; for example, the difficult subject of martingales is delayed until its usefulness can be applied in the treatment of mathematical finance.

Nuclear Science Abstracts

Applications of Stochastic Programming

SIAM Consisting of two parts, this book presents papers describing publicly available stochastic programming systems that are operational. It presents a diverse collection of application papers in areas such as production, supply chain and scheduling, gaming, environmental and pollution control, financial modeling, telecommunications, and electricity.

Handbook of Research on Geoinformatics

IGI Global "This book discusses the complete range of contemporary research topics such as computer modeling, geometry, geoprocessing, and geographic information systems"--Provided by publisher.

Introduction to Stochastic Processes with R

John Wiley & Sons An introduction to stochastic processes through the use of R Introduction to Stochastic Processes with R is an accessible and well-balanced presentation of the theory of stochastic processes, with an emphasis on real-world applications of probability theory in the natural and social sciences. The use of simulation, by means of the popular statistical freeware R, makes theoretical results come alive with practical, hands-on demonstrations. Written by a highly-qualified expert in the field, the author presents numerous examples from a wide array of disciplines, which are used to illustrate concepts and highlight computational and theoretical results. Developing readers' problem-solving skills and mathematical maturity, Introduction to Stochastic Processes with R features: Over 200 examples and 600 end-of-chapter exercises A tutorial for getting started with R, and appendices that contain review material in probability and matrix algebra Discussions of many timely and interesting supplemental topics including Markov chain Monte Carlo, random walk on graphs, card shuffling, Black-Scholes options pricing, applications in biology and genetics, cryptography, martingales, and stochastic calculus Introductions to mathematics as needed in order to suit readers at many mathematical levels A companion website that includes relevant data files as well as all R code and scripts used throughout the book Introduction to Stochastic Processes with R is an ideal textbook for an introductory course in stochastic processes. The book is aimed at undergraduate and beginning graduate-level students in the science, technology, engineering, and mathematics disciplines. The book is also an excellent reference for applied mathematicians and statisticians who are interested in a review of the topic.

Geographic Information Systems: Concepts,

Methodologies, Tools, and Applications

Concepts, Methodologies, Tools, and Applications

IGI Global Developments in technologies have evolved in a much wider use of technology throughout science, government, and business; resulting in the expansion of geographic information systems. GIS is the academic study and practice of presenting geographical data through a system designed to capture, store, analyze, and manage geographic information. Geographic Information Systems: Concepts, Methodologies, Tools, and Applications is a collection of knowledge on the latest advancements and research of geographic information systems. This book aims to be useful for academics and practitioners involved in geographical data.

Stochastic Processes, Estimation, and Control

SIAM The authors provide a comprehensive treatment of stochastic systems from the foundations of probability to stochastic optimal control. The book covers discrete- and continuous-time stochastic dynamic systems leading to the derivation of the Kalman filter, its properties, and its relation to the frequency domain Wiener filter aswell as the dynamic programming derivation of the linear quadratic Gaussian (LQG) and the linear exponential Gaussian (LEG) controllers and their relation to HÝsubscript 2¨ and HÝsubscript Ýinfinity¨¨ controllers and system robustness. This book is suitable for first-year graduate students in electrical, mechanical, chemical, and aerospace engineering specializing in systems and control. Students in computer science, economics, and possibly business will also find it useful.

Solutions Manual for Use with Introduction to Stochastic

Processes

Problems and Solutions in Mathematical Finance

Volume I - Stochastic Calculus

John Wiley & Sons

Numerical Solution of Stochastic Differential Equations

Springer Science & Business Media The numerical analysis of stochastic differential equations (SDEs) differs significantly from that of ordinary differential equations. This book provides an easily accessible introduction to SDEs, their applications and the numerical methods to solve such equations. From the reviews: "The authors draw upon their own research and experiences in obviously many disciplines... considerable time has obviously been spent writing this in the simplest language possible." --ZAMP

Probability, random variables, and stochastic processes

The fourth edition of Probability, Random Variables and Stochastic Processes has been updated significantly from the previous edition, and it now includes co-author S. Unnikrishna Pillai of Polytechnic University. The book is intended for a senior/graduate level course in probability and is aimed at students in electrical engineering, math, and physics departments. The authors' approach is to develop the subject of probability theory and stochastic processes as a deductive discipline and to illustrate the theory with basic applications of engineering interest. Approximately 1/3 of the text is new material--this material maintains the style and spirit of previous editions. In order to bridge the gap between concepts and applications, a number of additional examples have been added for further clarity, as well as several new topics.

Applied Flow and Solute Transport Modeling in Aquifers Fundamental Principles and Analytical and Numerical Methods

CRC Press Over recent years, important contributions on the topic of solving various aquifer problems have been presented in numerous papers and reports. The scattered and wide-ranging nature of this information has made finding solutions and best practices difficult. Comprehensive and self-contained, Applied Flow and Solute Transport Modeling in Aquifers compiles the scattered literature on the topic into a single-source reference of the most up-to-date information in the field. Based on Dr. Batu's 20 years of practical experience tackling aquifer problems in a myriad of settings, the book addresses essentially all currently applied aquifer flow and contaminant transport solutions, combines theory with practical applications, covers both analytical and numerical solutions, and includes solutions to real world contaminant transport modeling scenarios. Batu approaches the subject from the practicing consultant's point of view and elucidates the difficulties real world professionals have faced in solving aquifer flow and contamination problems. The author simplifies the necessary theoretical background as much as possible and provides all derivational details of the theoretical background as worked examples. He uses this method to explore how the derivations were generated for those who need to know while allowing others to easily skip them and still benefit and learn from the practical applications of the mathematical approaches. Containing 51 tables and 323 figures, the book covers both the breadth and the depth of currently applied aquifer flow and contaminant transport modeling solutions.

Introduction to Stochastic Processes, Second Edition

CRC Press Emphasizing fundamental mathematical ideas rather than proofs, Introduction to Stochastic Processes, Second Edition provides quick access to important foundations of probability theory applicable to problems in many fields. Assuming that you have a reasonable level of computer literacy, the ability to write simple programs, and the access to software for linear algebra computations, the author approaches the problems and theorems with a focus on

stochastic processes evolving with time, rather than a particular emphasis on measure theory. For those lacking in exposure to linear differential and difference equations, the author begins with a brief introduction to these concepts. He proceeds to discuss Markov chains, optimal stopping, martingales, and Brownian motion. The book concludes with a chapter on stochastic integration. The author supplies many basic, general examples and provides exercises at the end of each chapter. New to the Second Edition: Expanded chapter on stochastic integration that introduces modern mathematical finance Introduction of Girsanov transformation and the Feynman-Kac formula Expanded discussion of Itô's formula and the Black-Scholes formula for pricing options New topics such as Doob's maximal inequality and a discussion on self similarity in the chapter on Brownian motion Applicable to the fields of mathematics, statistics, and engineering as well as computer science, economics, business, biological science, psychology, and engineering, this concise introduction is an excellent resource both for students and professionals.

Solar Energy Update

Stochastic Processes in Magnetic Resonance

World Scientific This book describes methods for calculating magnetic resonance spectra which are observed in the presence of random processes. The emphasis is on the stochastic Liouville equation (SLE), developed mainly by Kubo and applied to magnetic resonance mostly by J H Freed and his co-workers. Following an introduction to the use of density matrices in magnetic resonance, a unified treatment of Bloch-Redfield relaxation theory and chemical exchange theory is presented. The SLE formalism is then developed and compared to the other relaxation theories. Methods for solving the SLE are explained in detail, and its application to a variety of problems in electron paramagnetic resonance (EPR) and nuclear magnetic resonance (NMR) is studied. In addition, experimental aspects relevant to the applications are discussed. Mathematical background material is given in appendices.

Student Solutions Manual to accompany Simulation and

the Monte Carlo Method, Student Solutions Manual

John Wiley & Sons This accessible new edition explores the major topics in Monte Carlo simulation Simulation and the Monte Carlo Method, Second Edition reflects the latest developments in the field and presents a fully updated and comprehensive account of the major topics that have emerged in Monte Carlo simulation since the publication of the classic First Edition over twenty-five years ago. While maintaining its accessible and intuitive approach, this revised edition features a wealth of up-to-date information that facilitates a deeper understanding of problem solving across a wide array of subject areas, such as engineering, statistics, computer science, mathematics, and the physical and life sciences. The book begins with a modernized introduction that addresses the basic concepts of probability, Markov processes, and convex optimization. Subsequent chapters discuss the dramatic changes that have occurred in the field of the Monte Carlo method, with coverage of many modern topics including: Markov Chain Monte Carlo Variance reduction techniques such as the transform likelihood ratio method and the screening method The score function method for sensitivity analysis The stochastic approximation method and the stochastic counter-part method for Monte Carlo optimization The cross-entropy method to rare events estimation and combinatorial optimization Application of Monte Carlo techniques for counting problems, with an emphasis on the parametric minimum cross-entropy method An extensive range of exercises is provided at the end of each chapter, with more difficult sections and exercises marked accordingly for advanced readers. A generous sampling of applied examples is positioned throughout the book, emphasizing various areas of application, and a detailed appendix presents an introduction to exponential families, a discussion of the computational complexity of stochastic programming problems, and sample MATLAB® programs. Requiring only a basic, introductory knowledge of probability and statistics, Simulation and the Monte Carlo Method, Second Edition is an excellent text for upper-undergraduate and beginning graduate courses in simulation and Monte Carlo techniques. The book also serves as a valuable reference for professionals who would like to achieve a more formal understanding of the Monte Carlo method.

Numerical Solution of Stochastic Differential Equations

Springer Science & Business Media The numerical analysis of stochastic differential equations (SDEs) differs significantly from that of ordinary differential equations. This book provides an easily accessible introduction to SDEs,

their applications and the numerical methods to solve such equations. From the reviews: "The authors draw upon their own research and experiences in obviously many disciplines... considerable time has obviously been spent writing this in the simplest language possible." --ZAMP

Introductory Statistics, Student Solutions Manual (e-only)

Academic Press Introductory Statistics, Student Solutions Manual (e-only)

Stochastic Networks

Cambridge University Press Communication networks underpin our modern world, and provide fascinating and challenging examples of large-scale stochastic systems. Randomness arises in communication systems at many levels: for example, the initiation and termination times of calls in a telephone network, or the statistical structure of the arrival streams of packets at routers in the Internet. How can routing, flow control and connection acceptance algorithms be designed to work well in uncertain and random environments? This compact introduction illustrates how stochastic models can be used to shed light on important issues in the design and control of communication networks. It will appeal to readers with a mathematical background wishing to understand this important area of application, and to those with an engineering background who want to grasp the underlying mathematical theory. Each chapter ends with exercises and suggestions for further reading.

Topics in Stochastic Processes

Stochastic Processes, Introduction, Covariance functions, Second order calculus, Karhunen-loeve expansion, Estimation problems, Notes; Spectral theory and prediction, Introduction, L Stochastic integrals, Decomposition of stationary processes, Examples of discrete parameter processes, Discrete parameter prediction: Special cases, Discrete parameter prediction: General solution, Examples of continuous parameter processes; Continuos parameter prediction special cases; yaglom's method, Some stochastic differential equations, Continuos parameter prediction: remarks on the general solution, Notes; Ergodic theory, Ergodicity and mixing, The pointwise ergodic theorem, Applications to real analysis, Applications to Markov chains, The Shannon-mcMillan theorem, Notes; Sample function analysis of

continuous parameter stochastic processes, Separability, Measurability, One-Dimensional brownian motion, Law of the iterated logarithm, Markov processes, Processes with independent increments, Continuous parameter martingales, The strong Markov property, Notes; The ito integral and stochastic differential equations, Definitions of the ito integral, Existence and uniqueness theorems for stochastic differential equations, Stochastic differentials: A chain rule, Notes.

Decision Theory Models for Applications in Artificial Intelligence: Concepts and Solutions

Concepts and Solutions

IGI Global One of the goals of artificial intelligence (AI) is creating autonomous agents that must make decisions based on uncertain and incomplete information. The goal is to design rational agents that must take the best action given the information available and their goals. Decision Theory Models for Applications in Artificial Intelligence: Concepts and Solutions provides an introduction to different types of decision theory techniques, including MDPs, POMDPs, Influence Diagrams, and Reinforcement Learning, and illustrates their application in artificial intelligence. This book provides insights into the advantages and challenges of using decision theory models for developing intelligent systems.

Probability and Statistics with Reliability, Queuing, and Computer Science Applications

John Wiley & Sons An accessible introduction to probability, stochastic processes, and statistics for computer science and engineering applications Second edition now also available in Paperback. This updated and revised edition of the popular classic first edition relates fundamental concepts in probability and statistics to the computer sciences and engineering. The author uses Markov chains and other statistical tools to illustrate processes in reliability of computer systems and networks, fault tolerance, and performance. This edition features an entirely new section on stochastic Petri nets—as well as new sections on system availability modeling, wireless system modeling, numerical solution techniques for Markov chains, and software reliability modeling, among other subjects. Extensive revisions take new developments in solution techniques and applications into account and bring this work totally up to date. It includes more than 200 worked examples and self-study exercises for each section. Probability and Statistics with Reliability, Queuing and Computer Science Applications, Second Edition offers a comprehensive introduction to probability, stochastic processes, and statistics for students of computer science, electrical and computer engineering, and applied mathematics. Its wealth of practical examples and up-to-date information makes it an excellent resource for practitioners as well. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Scientific and Technical Aerospace Reports

Introduction to Probability and Stochastic Processes with Applications

John Wiley & Sons An easily accessible, real-world approach to probability andstochastic processes Introduction to Probability and Stochastic Processes withApplications presents a clear, easy-to-understand treatment ofprobability and stochastic processes, providing readers with asolid foundation they can build upon throughout their careers. Withan emphasis on applications in engineering, applied sciences,business and finance, statistics, mathematics, and operationsresearch, the book features numerous real-world examples thatillustrate how random phenomena occur in nature and how to useprobabilistic techniques to accurately model these phenomena. The authors discuss a broad range of topics, from the basicconcepts of probability to advanced topics for further study,including Itô integrals, martingales, and sigma algebras.Additional topical coverage includes: Distributions of discrete and continuous random variablesfrequently used in applications Random vectors, conditional probability, expectation, andmultivariate normal distributions The laws of large numbers, limit theorems, and convergence ofsequences of random variables Stochastic processes and related applications, particularly inqueueing systems Financial mathematics, including pricing methods such asrisk-neutral valuation and the Black-Scholes formula Extensive appendices containing a review of the requisitemathematics and tables of standard distributions for use inapplications are provided, and plentiful exercises,

problems, andsolutions are found throughout. Also, a related website featuresadditional exercises with solutions and supplementary material forclassroom use. Introduction to Probability and StochasticProcesses with Applications is an ideal book for probabilitycourses at the upper-undergraduate level. The book is also avaluable reference for researchers and practitioners in the fieldsof engineering, operations research, and computer science whoconduct data analysis to make decisions in their everyday work.

Stochastic Methods and Their Applications to Communications

Stochastic Differential Equations Approach

Wiley-Blackwell Stochastic Methods & their Applications to Communications presents a valuable approach to the modelling, synthesis and numerical simulation of random processes with applications in communications and related fields. The authors provide a detailed account of random processes from an engineering point of view and illustrate the concepts with examples taken from the communications area. The discussions mainly focus on the analysis and synthesis of Markov models of random processes as applied to modelling such phenomena as interference and fading in communications. Encompassing both theory and practice, this original text provides a unified approach to the analysis and generation of continuous, impulsive and mixed random processes based on the Fokker-Planck equation for Markov processes. Presents the cumulated analysis of Markov processes Offers a SDE (Stochastic Differential Equations) approach to the generation of random processes with specified characteristics Includes the modelling of communication channels and interfer ences using SDE Features new results and techniques for the of solution of the generalized Fokker-Planck equation Essential reading for researchers, engineers, and graduate and upper year undergraduate students in the field of communications, signal processing, control, physics and other areas of science, this reference will have wide ranging appeal.

Applied Stochastic Differential Equations

Cambridge University Press Stochastic differential equations are differential equations whose solutions are stochastic processes. They exhibit appealing mathematical properties that are useful in modeling uncertainties and noisy phenomena in many disciplines. This book is motivated by applications of stochastic differential equations in target tracking and medical technology and, in particular, their use in methodologies such as filtering, smoothing, parameter estimation, and machine learning. It builds an intuitive hands-on understanding of what stochastic differential equations are all about, but also covers the essentials of It calculus, the central theorems in the field, and such approximation schemes as stochastic Runge-Kutta. Greater emphasis is given to solution methods than to analysis of theoretical properties of the equations. The book's practical approach assumes only prior understanding of ordinary differential equations. The numerous worked examples and end-of-chapter exercises include application-driven derivations and computational assignments. MATLAB/Octave source code is available for download, promoting hands-on work with the methods.

An Introduction to Stochastic Modeling

Academic Press An Introduction to Stochastic Modeling provides information pertinent to the standard concepts and methods of stochastic modeling. This book presents the rich diversity of applications of stochastic processes in the sciences. Organized into nine chapters, this book begins with an overview of diverse types of stochastic models, which predicts a set of possible outcomes weighed by their likelihoods or probabilities. This text then provides exercises in the applications of simple stochastic analysis to appropriate problems. Other chapters consider the study of general functions of independent, identically distributed, nonnegative random variables representing the successive intervals between renewals. This book discusses as well the numerous examples of Markov branching processes that arise naturally in various scientific disciplines. The final chapter deals with queueing models, which aid the design process by predicting system performance. This book is a valuable resource for students of engineering and management science. Engineers will also find this book useful.

Engineering Applications of Stochastic Processes

Theory, Problems and Solutions

Taylor & Francis Group A concise, systematic treatment of probabilistic calculations of the sort used in electronic communication, radar, and automatic control. Appropriate as a text in stochastic processes, statistical communication methods, or automatic control. First section discusses random variables. Second section deals with random processes, and response of linear systems to random processes. Each theoretical topic is followed by a description of the associated computational procedures. Chapters contain problems, with solutions.

Advanced Computational Methods for Knowledge Engineering

Proceedings of the 2nd International Conference on Computer Science, Applied Mathematics and Applications (ICCSAMA 2014)

Springer Science & Business Media The proceedings consists of 30 papers which have been selected and invited from the submissions to the 2nd International Conference on Computer Science, Applied Mathematics and Applications (ICCSAMA 2014) held on 8-9 May, 2014 in Budapest, Hungary. The conference is organized into 7 sessions: Advanced Optimization Methods and Their Applications, Queueing Models and Performance Evaluation, Software Development and Testing, Computational Methods for Mobile and Wireless Networks, Computational Methods for Knowledge Engineering, Logic Based Methods for Decision Making and Data Mining and Nonlinear Systems and Applications,

respectively. All chapters in the book discuss theoretical and practical issues connected with computational methods and optimization methods for knowledge engineering. The editors hope that this volume can be useful for graduate and Ph.D. students and researchers in Computer Science and Applied Mathematics. It is the hope of the editors that readers of this volume can find many inspiring ideas and use them to their research. Many such challenges are suggested by particular approaches and models presented in individual chapters of this book.

Introduction to Probability Models

Academic Press Rosss classic bestseller has been used extensively by professionals and as the primary text for a first undergraduate course in applied probability. With the addition of several new sections relating to actuaries, this text is highly recommended by the Society of Actuaries.

Introduction to Stochastic Processes

Courier Corporation This clear presentation of themost fundamental models ofrandom phenomena employsmethods that recognize computerrelatedaspects of theory. Topicsinclude probability spaces andrandom variables, expectationsand independence, Bernoulliprocesses and sums of independentrandom variables, Poisson processes, Markov chainsand processes, and renewal theory. Assuming only a backgroundin calculus, this outstanding text includes an introductionto basic stochastic processes.Reprint of the Prentice-Hall Publishers, Englewood Cliffs,New Jersey, 1975 edition.

Process Algebra and Probabilistic Methods. Performance Modelling and Verification

Joint International Workshop, PAPM-PROBMIV 2001, Aachen, Germany, September 12-14, 2001. Proceedings

Springer This book constitutes the refereed proceedings of the Joint Workshop on Process Algebra and Performance Modeling and Probabilistic Methods in Verification, PAPM-PROBMIV 2001, held in Aachen, Germany in September 2001. The 12 revised full papers presented together with one invited paper were carefully reviewed and selected from 23 submissions. Among the topics addressed are model representation, model checking, probabilistic systems analysis, refinement, Markov chains, random variables, stochastic timed systems, Max-Plus algebra, process algebra, system modeling, and the Mobius modeling framework.

Probability and Stochastics

Springer This text is an introduction to the modern theory and applications of probability and stochastics. The style and coverage is geared towards the theory of stochastic processes, but with some attention to the applications. In many instances the gist of the problem is introduced in practical, everyday language and then is made precise in mathematical form. The first four chapters are on probability theory: measure and integration, probability spaces, conditional expectations, and the classical limit theorems. There follows chapters on martingales, Poisson random measures, Levy Processes, Brownian motion, and Markov Processes. Special attention is paid to Poisson random measures and their roles in regulating the excursions of Brownian motion and the jumps of Levy and Markov processes. Each chapter has a large number of varied examples and exercises. The book is based on the author's lecture notes in courses offered over the years at Princeton University. These courses attracted graduate students from engineering, economics, physics, computer sciences, and mathematics. Erhan Cinlar has received many awards for excellence in teaching, including the President's Award for Distinguished Teaching at Princeton University. His research interests include theories of Markov processes, point processes, stochastic calculus, and stochastic flows. The book is full of insights and observations that only a lifetime researcher in probability can have, all told in a lucid yet precise style.